IN THE CLAIMS

Claims 1 – 11 withdrawn.

- 12. (AMENDED) An <u>isolated polynucleotide encoding an</u> enzymatically active variant of a [precursor] phenol oxidizing enzyme, [which precursor] <u>wherein said</u> phenol oxidizing enzyme has at least 68% identity to the amino acid sequence as disclosed in SEQ ID NO:2, said variant comprising a sequence that differs from that of said [precursor] <u>phenol oxidizing enzyme</u> in at least one of the positions 48, 67, 70, 76, 83, 98, 115, 119, 134, 171, 175, 177, 179, 188, 236, 246, 253, 254, 269, 272, 296, 302, 308, 318, 329, 331, 346, 348, 349, 365, 390, 391, 394, 404, 415, 423, 425, 428, 434, 465, 479, 481, 483, 499, 550, 562, 570, and 573, or sequence positions corresponding thereto.
- 13. (Original) An expression vector comprising the polynucleotide of claim 12.
- 14. (Original) A host cell comprising the expression vector of claim 13.
- 15. (Original) The host cell of claim 14, wherein said host cell is a filamentous fungus.
- 16. (Original) The host cell of claim 15, wherein said fungus is an Aspergillus species or a Trichoderma species.

17, Withdrawn

18. (AMENDED) A method for obtaining a phenol oxidizing enzyme variant [derived] from a Stachybotrys species, [said variant having at least one altered property relative to a precursor phenol oxidizing enzyme, which comprises] comprising the steps of:

mutagenizing a gene encoding [said precursor] <u>a</u> phenol oxidizing enzyme, which [precursor] <u>phenol oxidizing</u> enzyme comprises an amino acid sequence having at least 68% identity to the amino acid sequence shown in SEQ ID NO:2;

introducing the mutant gene into a host strain whereby a transformed host strain is obtained;

growing said transformed host whereby said mutant gene is expressed and a phenol oxidizing enzyme variant, differing from said [precursor] phenol oxidizing enzyme by one or more amino acid substitutions, is identified by recovering said variant and screening it for increased phenol oxidizing activity and/or increased pH optimum.

- 19. (Original) The method of claim 18, wherein said one or more amino acid substitutions correspond to amino acid positions selected from the group consisting of 48, 67, 70, 76, 83, 98, 115, 119, 134, 171, 175, 177, 179, 188, 236, 246, 253, 254, 269, 272, 296, 302, 308, 318, 329, 331, 346, 348, 349, 365, 390, 391, 394, 404, 415, 423, 425, 428, 434, 465, 479, 481, 483, 499, 550, 562, 570, and 573 of said SEQ ID NO:2 sequence.
- 20. (Original) The method of claim 18, wherein said mutagenized gene is a cloned Stachybotrys gene, preferably a cloned Stachybotrys chartarum gene, or a cloned gene capable of hybridizing to such a Stachybotrys gene under conditions of intermediate to high stringency.
- 21. (AMENDED) A method for producing a variant of a [precursor] phenol oxidizing enzyme, which [precursor] enzyme comprises an amino acid sequence having at least 68% identity to the amino acid sequence shown in SEQ ID NO:2; said method comprising the steps of:
- a) culturing a host cell comprising a polynucleotide encoding said variant, wherein said variant differs from said [precursor] phenol oxidizing enzyme sequence in at least one of the positions 48, 67, 70, 76, 83, 98, 115, 119, 134, 171, 175, 177, 179, 188, 236, 246, 253, 254, 269, 272, 296, 302, 308, 318, 329, 331, 346, 348, 349, 365, 390, 391, 394, 404, 415, 423, 425, 428, 434, 465, 479, 481, 483, 499, 550, 562, 570, and 573, or sequence positions corresponding thereto, under conditions suitable for the production of said variant; and
 - (b) optionally recovering said variant produced.

- 25. (NEW) The isolated polynucleotide of claim 12, wherein said polynucleotide encodes a variant which comprises a sequence that differs from that of the phenol oxidizing enzyme in at least one of the positions 254, 272, 346, 348, 394, and 425, or sequence positions corresponding thereto.
- 26. (NEW) The isolated polynucleotide of claim 12 wherein said polynucleotide encodes an amino acid substitution at one or more of the positions or position sets: 76/254/302; 76/254/302/188; 76/254/302/394/425; 119/254/329; 119/254/390; 119/254/415; 171/254/346; 236/254; 254; 254/272; 254/302/346/348; 254/346/348; 254/394; 254/550; and 394/425.

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27. (NEW) The isolated polynucleotide of claim 12 encoding a variant having at least one amino acid substitution or substitution set selected from:

N391S G115S D562G D394N/V425M V134I/H177Y L499F M254F M254F/L499F M98L/M254F L76W/M254F M254F/F349Y H175V H177V L76W/M254F/E302V M254F/D394N/V425M L76W/M254F/E302V/D394N/V425M M254F/A296S M254F/A496S M254F/A496S M254F/A83K M254F/A83T M254F/A83T M254F/A83T M254F/A83T M254F/B30S M254F/B3	
D562G D394N/V425M V134I/H177Y L499F M254F M254F M254F/L499F M98L/M254F L76W/M254F M254F/F349Y H175V L176W/M254F/E302V M254F/D394N/V425M L76W/M254F/E302V/D394N/V425M M254F/A296S M254F/A296S M254F/A318Y M254F/R83K M254F/R83K M254F/R83K M254F/R931T M254F/R97T M254F/R97T V119L/M254F/R97V M254F/R97T M254F/R97T M254F/R97T M254F/R97T M254F/R97T M254F/R97T M254F/R97T M254F/R97D M254F/R93B	N391S
D394N/V425M V134I/H177Y L499F M254F M254F M254F L499F M98L/M254F L76W/M254F M254F/F349Y H175V H177V L76W/M254F/E302V M254F/D394N/V425M M254F/D394N/V425M M254F/A296S M254F/A83K M254F/A83K M254F/A83K M254F/A83T M254F/A83T M254F/A83T M254F/A96S M254F/A96S M254F/A96S M254F/A96S M254F/A96S M254F/A96S M254F/A96S M254F/A96S M254F/A96T M254F/A96S M254F/A96T M254F/A96S M254F/A96S M254F/A96S M254F/A96S M254F/A96S M254F/A96S M254F/A96S M254F/A96S M254F/A96S M254F/A479G M254F/A479G M254F/A54F/A569M M154F/A269M V119L/M254F/A269M M254F/A269M V119L/M254F/A269N M254F/A269M V119L/M254F/A269N M254F/A269M V119L/M254F/A269N M254F/A269M V119L/M254F/A269N M254F/A269N M254F/A269N M254F/A269N M254F/A269N M254F/A269N	G115S
V134I/H177Y L499F M254F M254F/L499F M98L/M254F L76W/M254F M254F/F349Y H175V H177V L76W/M254F/E302V M254F/D394N/V425M L76W/M254F/E302V/D394N/V425M M254F/A296S M254F/A318Y M254F/R83K M254F/R83K M254F/R83K M254F/R83T M254F/R67T V119L/M254F/N70V M254F/S331T M254F/S45A M254F/R43A M254F/R43A M254F/R43A M254F/R428G M254F/R43AE	D562G
V134I/H177Y L499F M254F M254F/L499F M98L/M254F L76W/M254F M254F/F349Y H175V H177V L76W/M254F/E302V M254F/D394N/V425M L76W/M254F/E302V/D394N/V425M M254F/A296S M254F/A318Y M254F/R83K M254F/R83K M254F/R83K M254F/R83T M254F/R67T V119L/M254F/N70V M254F/S331T M254F/S45A M254F/R43A M254F/R43A M254F/R43A M254F/R428G M254F/R43AE	D394N/V425M
M254F M254F/L499F M98L/M254F L76W/M254F M254F/F349Y H175V H177V L76W/M254F/E302V M254F/D394N/V425M L76W/M254F/E302V/D394N/V425M M254F/A296S M254F/A296S M254F/R83K M254F/R83K M254F/R83K M254F/R83T M254F/R83T M254F/R67T V119L/M254F/N70V M254F/N70V M254F/B36ST M254F/E36ST M254F/E36ST M254F/E36ST M254F/R423A M254F/R423A M254F/R423A M254F/R434E M254F/R434E M254F/R437PG M254F/R437PG M254F/R437PG M254F/R437PG M254F/R437PG M254F/R437PG M254F/R438PM M254F/R439PM M254F/R4269M V119L/M254F/R269M V119L/M254F/G329N M254F/G329N	
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M98L/M254F L76W/M254F M254F/F349Y H175V H177V L76W/M254F/E302V M254F/D394N/V425M L76W/M254F/E302V/D394N/V425M M254F/A296S M254F/W318Y M254F/R83K M254F/R83K M254F/R83K M254F/R83T M254F/R67T V119L/M254F/N70V M254F/B365T M254F/B365T M254F/B36ST M254F/R43A M254F/R43A M254F/R43AE M254F/R434E M254F/R434E M254F/R434E M254F/R450A M254F/R450A M254F/R450A M254F/R450A M254F/R434E	M254F
M98L/M254F L76W/M254F M254F/F349Y H175V H177V L76W/M254F/E302V M254F/D394N/V425M L76W/M254F/E302V/D394N/V425M M254F/A296S M254F/W318Y M254F/R83K M254F/R83K M254F/R83K M254F/R83T M254F/R67T V119L/M254F/N70V M254F/B365T M254F/B365T M254F/B36ST M254F/R43A M254F/R43A M254F/R43AE M254F/R434E M254F/R434E M254F/R434E M254F/R450A M254F/R450A M254F/R450A M254F/R450A M254F/R434E	M254F/L499F
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M254F/A269M V119L/M254F/G329N M254F/G329N	P253A
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M254F/G329N	
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M254F/S331A	
	M254F/S331A

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M254S
M254H
M254V
M254T
M254P
M254G
M254K
M254C
M254F/D394G
M254F/D394V
M254F/D394S
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M254F/M179L
M254F/1181D
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M254F/E346V/E348Q/M171P
M254F/E346V/E348Q/M171L
M254F/E346V/M171Y
M254F/ E346V/E348Q/M171V
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M254F/E346V/E348Q/M188K/D394W/S272L/E236K
M254F/E346V/E348Q/M188K/D394W/E236Q
M254F/E346V/E348Q/M188K/D394W/E236K
M254F/E346V/E348Q/M188K/D394W/E236D
M254F/E346V/E348Q/M188K/D394W/E236A
M188K/M254F/E346V/E348Q/D394W

- (NEW) The isolated polynucleotide of any one of claims 12, 25, 26, or 27, 28. wherein said phenol oxidizing enzyme has at least 80% identity, and preferably at least 85% identity, to the amino acid sequence disclosed in SEQ ID NO:2.
- (NEW) The isolated polynucleotide of any one of claims 12, 25, 26, or 27, 29. wherein the phenol oxidizing enzyme has at least 90% identity, and preferably at least 95% identity, to the amino acid sequence disclosed in SEQ ID NO:2.
- (NEW) The isolated polynucleotide of claim 29, wherein the phenol oxidizing 30. enzyme has the amino acid sequence disclosed in SEQ ID NO:2.
- (NEW) The isolated polynucleotide of claim 12, wherein the phenol oxidizing 31. enzyme variant has increased phenol oxidizing activity at high pH.

- 32. (NEW) The isolated polynucleotide of claim 31, wherein the variant has a pH optimum of at least 8, and preferably at least 9.
- 33. (NEW) The isolated polynucleotide of claim 12, wherein said phenol oxidizing enzyme is obtainable from a Stachybotrys species, preferably Stachybotrys chartarum.